separated piece of the GaAs substrate 1. An example of the semiconductor element or device so manufactured is illustrated in Fig. 4.

Replace the paragraph beginning at page 21, line 13, with:

Similar to the semiconductor device according to the first embodiment, the semiconductor device of this embodiment has a peripheral projecting flange running around the substrate 1. The flange includes a plurality of layers; a nickel based plating layer 4 (for example, the NiP layer, Ni-B layer, NI-B-W layer), a catalyst layer 3 (for example, Pd layer, Pd/Ti layer) , a nickel based electrolessly plated alloy layer (for example, Ni-P layer, Ni-B layer, NI-B-W layer), a substituted electrolessly gold plated layer, and then a laser-cut metal layer 10 (for example, Ni layer, Cr layer). It should be noted that the second conducting layer 9 has a nickel based electrolessly plated alloy layer and a substituted electrolessly gold plated layer.

IN THE CLAIMS

Cancel claim 1-5 and replace the indicated claims with:

6. (Amended) A semiconductor device comprising:

a semiconductor substrate having first and second main surfaces, having a semiconductor element in the first main surface, and having a peripheral surface contacting the first and second main surfaces;

a heat radiation layer on the second main surface of the semiconductor substrate; and

a flange including a plurality of metal layers disposed on the peripheral surface of the substrate, the metal layers comprising:

a first metal layer having a surface layer containing palladium on a side toward the first main surface;

a second metal layer of a nickel-based alloy disposed on the surface layer containing palladium of the first metal layer, the second metal layer having a top portion located below the first main surface; and

a third metal layer disposed under the first metal layer.

7. (Amended) The semiconductor device according to claim 6, wherein the third metal layer comprises a nickel-based alloy layer, a gold layer, and a laser-cut metal layer including one of a nickel layer and a chromium layer.

8. (Amended) The semiconductor device according to claim 7, wherein the third metal layer is selected from the group consisting of a single layer of gold, and a plurality of layers including a titanium layer and a gold layer, on the laser-cut metal layer.

9. (Amended) The semiconductor device according to claim 6, wherein the first metal layer comprises one selected from the group consisting of a palladium layer and a titanium layer under the palladium layer, and a single layer.

10. (Amended) The semiconductor device according to claim 6, wherein the second metal layer is selected from the group consisting of Ni-P alloy, Ni-B alloy, and Ni-B-W alloy.

IN THE ABSTRACT

Replace the abstract with:

ABSTRACT OF THE DISCLOSURE

A semiconductor device having a plated heat sink (PHS) layer on the back surface, preventing a short circuit between a bonding wire, and a first metal layer. A method of making a semiconductor device including forming a catalyst layer on a bottom of a first separation groove in the front surface of a semiconductor substrate, and forming the first metal layer selectively in the first separation groove by electroless plating, using the catalyst layer as a catalyst.